

**SYSTEM AND METHOD FOR MEASURING AND STORING INFORMATION
PERTAINING TO TELEVISION VIEWER OR USER BEHAVIOR**

CROSS REFERENCE TO RELATED U.S. APPLICATIONS

This application claims priority from Ivanyi, "SYSTEM AND
5 METHOD FOR MEASURING AND STORING INFORMATION PERTAINING TO
TELEVISION VIEWER OR USER BEHAVIOR", U.S. Patent Application
No. 08/975,374, filed November 20, 1997, incorporated herein
by reference.

FIELD OF THE INVENTION

10 The present invention pertains to a system and a method
for monitoring and storing information pertaining to
television and cable viewer as well as user behavior and, in
particular, to a system and a method for monitoring viewer or
user behavior with respect to televised programs, advertising
15 commercials, public service announcements and services,
including Internet access and utilization.

BACKGROUND OF THE INVENTION

Television service can be characterized in four ways.
The first can be characterized as "cable-ready" television.
20 This service, which is equivalent to the service a viewer
received over the airwaves, is a basic, unscrambled, one-way
broadcast service. The second is a on-way cable service.

This service provides a wider range of service than is available over the airwaves, but is still one-way, as there is no capability for a signal to be transmitted from the viewers premises back to the broadcast provider. One-way cable

5 television cannot support, for example, interactive services such as pay-per-view. The third type of service can be characterized as an addressable cable service. The cable box provided to a viewer of this service includes a identification chip by which the viewer premises can be uniquely identified

10 by an outside computer. This type of service can support interactive services such as "pay-per-view". Finally, the fourth service includes high speed Internet access with the television signal. This service provides a broadband signal that includes with the television transmission to the viewer

15 an Internet access signal. Thus, a viewer watching a television program can at the same time access the Internet, and have a portion of the viewing display devoted to presenting, for example, a web site. A web site can be accessed by, for example, using an optical scanner to read a

20 bar code in an advertisement.

Television viewership information and viewer behavioral characteristics and information are important factors and criteria for determining the costs and effectiveness of

television programs and advertising commercials. Television viewership is currently tracked by various means, most notable of which is the Nielsen rating system which measures rankings by households. These rankings have come to be commonly known 5 as "Ratings". A "Share" represents the percentage of television sets in use.

The demographics which are utilized by Nielsen includes various demographic groups by age, gender, ethnic and economic characteristics.

10 The Nielsen rating system, however, has come under criticism from industry sources questioning its accuracy and effectiveness of demographic targeting for purposes of determining advertising revenues. Further, existing market research services and measurement procedures can, at best, be 15 characterized as being inadequate for capturing accurate and detailed viewer patterns. As a result of hardware limitations and the communication constraints associated therewith, it has been difficult to incorporate the features of real-time monitoring systems into systems which attempt to formulate 20 behavioral patterns and histories. Most of the systems which have been designed in the past, with this objective in mind, have tended to be application specific and have required customization.

In addition, new services, such as web-based services and features over the Internet, introduce new challenges for tracking viewer behavior.

Prior art systems have also been characterized by the
5 limited sample information, sample size, biases in selecting marketing research samples and errors in data interpretation.

SUMMARY OF THE PRESENT INVENTION

The present invention provides a system and a method
10 which overcomes shortcomings of the prior art viewer tracking devices, techniques and methods.

The present invention is directed to a television and cable viewer or user monitoring system and method which monitors television viewer or user (hereinafter collectively referred to as "viewer") behavior and behavior patterns. For the purposes of describing the present invention, television includes but is not limited to television, cable television, and Internet-based services and sites accessed through cable television. Similarly, a viewer behavior is any action that results in an electronic signal being transmitted, either locally within the viewing premises, or back to the television service provider.
20

The system comprises a signal receiving device which receives analog and digital transmissions from a cable operator. The system anticipates the viability of Internet-based programming and broadcasts. The video signals are

5 broadcast by a television station transmitter either via traditional cable transmission or via a network such as the Internet. The video signals are transmitted to the signal receiving device via an appropriate communication system.

The system also comprises a control device which may be a

10 remote control device for providing control over the signal receiving device. Alternatively, the control device can be a keyboard such as that used with a personal computer system, or a pointing device such as a mouse. The control device can also include devices such as bar code scanners or swipe units

15 that can read the magnetic strip on a credit card, and can be voice activated. The control device provides the means by which a video viewer may control the operation of the signal receiving device so as to turn the signal receiving device on or off, to change channels, to increase or decrease the volume

20 level and/or to MUTE or UNMUTE the sound on the television as well as the viewer's ability to enter data into the system on an interactive basis.

The system also comprises a television or video display

device for user viewing. The signal receiving device is connected to the video display device so as to transmit or relay the video signals thereto.

The system of the present invention will operate in
5 conjunction with a plurality of signal receiving devices, and associated video display devices and remote control devices,
for a multitude of video viewers.

The signal receiving device comprises a central processing unit (CPU) which serves to provide control over the
10 signal receiving device. The signal receiving device also comprises a random access memory (RAM) device and a read only memory (ROM) device which are connected with the CPU. The signal receiving device also comprises a receiver, for receiving broadcast signals from a broadcasting station, television station, or cable service provider or Internet
15 service provider, and a transmitter, for transmitting signals to the broadcasting station, or service provider. The receiver and the transmitter are connected to the CPU. The signal receiving device also comprises a transmitter, for
20 relaying the received video signals to the video display device, which transmitter is also connected to the CPU.

The signal receiving device also comprises an input device, for enabling a user to enter commands into the signal

receiving device such as, for example, to turn the device on or off, to change channels, to adjust volume and/or to MUTE or UNMUTE the sound. The input device can also include a keypad or keyboard, a point and click device such as a mouse, optical and/or magnetic scanning devices, and a voice activation unit.

5 The input device is also connected to the CPU. In one embodiment, the input device is combined with the control device. The signal receiving device also comprises an output device which provides a visual indication of the state of

10 operation of the signal receiving device. The output device is also connected to the CPU.

The signal receiving device also comprises a polling signal receiver which is connected to the CPU and which receives signals which are transmitted to the signal receiving

15 device from the central processing computer. The signal receiving device also comprises a polling signal transmitter which is connected to the CPU and which transmits data and/or information from the signal receiving device to the central processing computer. As will be described in more detail

20 hereinbelow, the data and/or information which is transmitted from the signal receiving device is the data and/or information indicative of and/or reflecting viewer behavior.

The signal receiving device also comprises a remote

control receiver which receives signals which are transmitted to the signal receiving device from the remote control device. The remote control receiver is also connected to the CPU.

The signal receiving device also comprises a plurality of monitoring devices which serve to monitor various operational states of the signal receiving device. These monitoring devices include: (1) an ON/OFF monitoring device, which monitors the ON/OFF state of the signal receiving device and generates a digital signal representative of this operational state; (2) a CHANNEL monitoring device, which monitors the television or broadcast channel or frequency being viewed by the television viewer and which generates a digital signal representative of the channel being viewed; (3) a MUTE or UNMUTE monitoring device, which monitors the occurrence of a MUTE or UNMUTE operational state and which generates a digital signal representative of a MUTE or UNMUTE state; (4) a VOLUME CHANGE monitoring device which will monitor decreases and increases in volume and volume level; (5) a keypress monitoring device, which monitors the depressing of a key on a keypad or keyboard and which generates a digital signal representative of the key depressed; (6) mouse monitoring device which monitors the click of a mouse button and which generates a digital signal representative of the button

clicked and the location of the mouse; and (7) such other device enabling interaction between the viewer or user and a remote computer including but not limited to one or more computers on the Internet, such as optical and magnetic scanners. Each of the above described monitoring devices are connected to the CPU.

The signal receiving device also comprises a real-time event clock for maintaining accurate real-time event time keeping and time measurements. The event clock is connected to the CPU. The signal receiving device also comprises a data latching device which is connected to the CPU and to each of the ON/OFF monitoring device, the CHANNEL monitoring device, the MUTE/UNMUTE monitoring device, the VOLUME CHANGE monitoring device, the key monitoring device, the mouse monitoring device, the scanner monitoring devices, and any interactive device as well as the realtime event clock.

Monitoring devices may also be utilized for monitoring the utilization of functions such as "SELECT" and "DISPLAY" as well as other viewer selectable functions such as those related to events related to on-line and interactive services and products as well as recreational activities and games.

Upon the occurrence of a pre-specified event, such as the turning of the signal receiving device on or off, the changing

of a television channel, the changing of volume level and/or the MUTING and UNMUTING of sound, the depression of a key or the click of a mouse, the reading of a bar code or a magnetic strip, the data from each of the monitoring devices, as well 5 as the time measured by the real-time event clock, will be read by, and stored within, the data latching device in order to provide a time-stamped operational state of the signal receiving device.

A data structure is utilized which contains the data 10 representative of the time-stamped data obtained from the monitoring devices. The data structure consists of a bit data stream in which pre-assigned bits store the time stamp data, on/off data, channel data, MUTE/UNMUTE data, volume data, keypress data, mouse data, scanner data and user 15 identification data. Other bits may be utilized to store other appropriate data as specified by the system.

The states of each of the monitoring devices are continuously monitored with their respective states represented in a digital signal fashion. When a change of 20 operational state occurs, whether by viewer activation of the input device or the remote control device, the CPU will activate the data latching device. The data latching device will read the signals present at each of the monitoring

devices, as well as the time from the real-time event clock, so as to obtain a time-stamped digital signal representative of the post-event operational state of signal receiving device.

5 The signal receiving device also comprises a memory storage device or database for storing raw data and/or information, and/or any other data or information necessary for system operation, which is received by the data latching device.

10 The system also comprises a central processing computer which is located at a central location. The central processing computer transmits signals to, and receives data and/or information from, the signal receiving device and will perform various processing routines in conjunction with the 15 received data and/or information.

The central processing computer, which collects data from any number of signal receiving devices, is utilized for collecting and processing the data and/or information in conjunction with program and advertising commercial content 20 and correlated time data.

The central processing computer comprises a central processing unit (central CPU) which serves to provide control

over the central processing computer. The central processing computer also comprises a random access memory (RAM) device and a read only memory (ROM) device which are connected to the central CPU. The central processing computer also comprises a receiver, for receiving signals which contain data and/or information from the signal receiving device, and a transmitter, for transmitting signals to the signal receiving device. The receiver and the transmitter are connected to the central CPU. As will be described in more detail hereinbelow, the data and/or information which is received from the signal receiving device will include the aforementioned time-stamped data indicative of and/or reflecting the operational state of the signal receiving device.

The central processing computer also comprises an input device, for enabling a user to enter data and/or commands into the central processing computer. The input device is also connected to the central CPU. The central processing computer also comprises an output device which provides a visual indication of the state of operation of the central processing computer. The output device is also connected to the central CPU.

The central processing computer also comprises a polling signal transmitter which is connected to the central CPU and

which transmits polling signals to the signal receiving device and, in particular, to the polling signal receiver. The central processing computer also comprises a polling signal receiver which is connected to the central CPU and which

5 receives polling signals from the signal receiving device and, in particular, from the polling signal transmitter.

The central processing computer also comprises a memory storage device or database for storing data and/or information, including raw data and/or information, as well as

10 other data and/or information, which is received from the signal receiving device. The database may contain information regarding viewers, subscribers and demographics which may be obtained and stored with the viewers or subscribers permission.

15 The system and method of the present invention serves to monitor television viewer behavior and/or patterns by recording data and/or information which reflects viewer events. Viewer events include on/off operation of the signal receiving device, the changing of channels, the muting or

20 unmuting of volume, the changing of volume, the depression of a key on a keypad or keyboard, the click of a mouse, reading a bar code or magnetic strip, as well as any other event-defined activities which may occur at the viewer's direction,

including interactive events between the viewer and one or more remote computers and non-interactive events.

The data and/or information, which is initially stored in the signal receiver device, can be transmitted, at various 5 times, to the central processing computer. The central processing computer may then process the data and/or information, in any one of a number of ways in order to obtain statistical and/or other information which may be utilized in order to describe or gauge viewer behavior. This data and/or 10 information may also provide statistical information for a large group of viewers.

The processed data and/or information may be continuously or periodically processed and updated, in conjunction with detailed information and/or listings corresponding to 15 programming and advertising commercials.

Accordingly, it is an object of the present invention to provide a system and a method for monitoring and storing information pertaining to television viewer or user behavior.

It is another object of the present invention to provide 20 a system and method for monitoring television viewer or user behavior with regards to, and in response to, televised programs and commercial advertisements.

It is yet another object of the present invention to provide a system and a method for monitoring and storing information pertaining to a television viewer's or user's actions in controlling and/or changing settings and/or controls for various functions on a television or signal receiving device.

It is yet another object of the present invention to provide a system and a method for monitoring and storing information pertaining to a television viewer's or user's actions in controlling and/or changing settings and/or controls for various functions on a television or signal receiving device or such other devices enabling interaction between the viewer or user and a remote computer including but not limited to one or more computers on the Internet. These viewer or user actions can be correlated to broadcast events by means of event time-stamped data, and/or information.

Other objects and advantages of the present invention will be apparent to those skilled in the art upon a review of the Description of the Preferred Embodiment taken in conjunction with the Drawings which follow.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates the system of the present invention
in block diagram form;

Figure 2 illustrates the signal receiving device of the
5 system of Figure 1 in block diagram form;

Figure 3 illustrates a diagram of a preferred data
structure containing the data obtained by the data latching
device of Figure 2;

Figure 4 illustrates the central processing computer of
10 Figure 1 in block diagram form; and

Figure 5 illustrates a flow chart which illustrates the
operational steps and method of utilizing the system of the
present invention.

15 **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

In a preferred embodiment, the present invention is
directed to a system and a method for monitoring the
activities of the public by monitoring the activities of a
significant or sufficient sample of television viewers or
20 users. The present invention provides a system and a method

for monitoring viewer or user activities in viewing or using a television, such as, for example, monitoring when the viewer or user changes viewing channels, changes the volume, mutes or unmutes the sound, turns a signal receiving device on or off,

5 depresses a key or clicks a mouse, or performs any other activity or function related to the viewing or use of a television or Internet based services and sites accessed through cable television.

The present invention can record any one or more of the

10 above-described activities as well as the time at which it or they occurred and utilize this information with defined schedules or data so as to determine viewer or user behavior.

For example, the present invention may monitor when a viewer changes channels, note that such change occurred at the

15 time a program or commercial aired and correlate the time of the change of channel with the program or commercial so as to draw conclusions as to viewer response to the program or commercial. The present invention can also monitor when a viewer presses a key on a keyboard, clicks a mouse button,

20 scans a bar code to access a web site on the Internet, and swipes a credit card to pay for an item purchased via the Internet.

Figure 1 illustrates a preferred embodiment of the system

of the present invention which is designated generally by the reference numeral 100. The present invention is directed to a television viewer or user monitoring system and method which monitors television viewer or user behavior and behavior patterns. The system 100 comprises a signal receiving device 1 which receives television signal broadcasts. The television signals are broadcast by a television station or signal transmitter 10. The television signals, in one preferred embodiment, are transmitted to the signal receiving device 1 via a cable television communication system which may include a hard-wired or a wireless system or medium. With regard to both broadcast systems, the television signals may be transmitted over conventional wired cable systems and/or via satellite transmission systems and/or any combination thereof.

It is important to note that the communication system utilized in conjunction with the present invention can also include any suitable signal transmission devices and mediums, including telephone communication devices and systems, fiber optic communication devices and systems and other communication devices and systems which are known to those skilled in the art.

The system 100 also comprises a control device 2 which, in the preferred embodiment, is a remote control device for

providing control over the signal receiving device 1. The control device 2 provides the means by which a television viewer may control the operation of the signal receiving device 1 so as to turn the signal receiving device on or off,

5 to change channels, to increase or decrease the volume level and/or to MUTE or UNMUTE the sound on the television as well as the viewer's ability to enter data into the system via a keypad or keyboard on an interactive and/or non-interactive basis so as to facilitate the use of the services and/or

10 products provided over the communication system. The control device can also include a point and click device such as a mouse, and devices for scanning bar codes and magnetic strips.. In addition, the control device can be voice-activated. This further facilitates the use of the present

15 invention to monitor events related to on-line and interactive services and products, such as those provided over the Internet and world wide web, as well as recreational activities and games. The system 100 also comprises a video display device 3 for user viewing. The signal receiving

20 device 1 is connected to the video display device 3 so as to transmit or relay the television signals thereto.

Although a single signal receiving device 1, along with an associated video display device 3 and a remote control 2,

are depicted in Figure 1, it is important to note that the system of the present invention, in the preferred embodiment, will operate in conjunction with a plurality of signal receiving devices, and associated televisions and remote control devices, for a multitude of television viewers.

The system 100 also comprises a central processing computer 4 which is located at a central location. The central processing computer 4 will transmit signals to, and receive data and/or information from, the signal receiving device 1 and will perform various processing routines in conjunction with the received data and/or information.

Figure 2 illustrates the main components of the signal receiving device 1 of Figure 1 in block diagram form. In Figure 2, the signal receiving device comprises a central processing unit (CPU) 21 which serves to provide control over the signal receiving device 1. The signal receiving device 1 also comprises a random access memory (RAM) device 22 and a read only memory (ROM) device 24 which are connected to the CPU 21. The signal receiver device 1 also comprises a receiver 25, for receiving broadcast signals from a broadcasting station or service provider, and a transmitter 26, for transmitting signals to the broadcasting station, television station, or service provider. The receiver 25 and

the transmitter 26 are connected to the CPU 21. The signal receiving device 1 also comprises a transmitter 27, for relaying the received television signals to the video display device 3, which transmitter is also connected to the CPU 21.

- 5 The signal receiving device 1 also comprises an input device 28, for enabling a user to enter commands into the signal receiving device such as, for example, to turn the device on or off, to change channels, to adjust volume and/or to MUTE or UNMUTE the sound. The input device can include a
- 10 keypad or keyboard that include a plurality of manually actuatable keys, and/or a point and click device such as a mouse, and optical and magnetic scanning devices. The input device 28 is also connected to the CPU 21. The signal receiving device 1 also comprises an output device 29 which,
- 15 in the preferred embodiment, is a display device which provides a visual indication of the state of operation of the signal receiving device 1. The output device 29 is also connected to the CPU 21.

The signal receiving device 1 also comprises a polling signal receiver 30 which is connected to the CPU 21 and which receives signals which are transmitted to the signal receiving device 1 from the central processing computer 4. The signal receiving device 1 also comprises a polling signal transmitter

32 which is connected to the CPU 21 and which transmits data and/or information from the signal receiving device 1 to the central processing computer 4. As will be described in more detail hereinbelow, the data and/or information which is
5 transmitted from the signal receiving device 1 is the data and/or information that reflects viewer behavior.

The signal receiving device 1 also comprises a remote control receiver 32 which receives signals which are transmitted to the signal receiving device 1 from the remote
10 control device 2. The remote control receiver 32 is also connected to the CPU 21. In one embodiment, the remote control device can be combined with the input device.

The signal receiving device 1 also comprises a plurality of monitoring devices 33A to 33G which serve to monitor
15 various operational states of the signal receiving device 1. These monitoring devices include: (1) an ON/OFF monitoring device 33A, which monitors the ON/OFF state of the signal receiving device 1 and generates a digital signal representative of this operational state; (2) a CHANNEL
20 monitoring device 33B, which monitors the television or broadcast channel or frequency being viewed by the television viewer and which generates a digital signal representative of the channel being viewed; (3) a MUTE or UNMUTE monitoring

- device 33C, which monitors the occurrence of a MUTE or UNMUTE operational state and which generates a digital signal representative of a MUTE or UNMUTE state; (4) a VOLUME CHANGE monitoring device 33D which will monitor decreases and
- 5 increases in volume and volume level and which generates a digital signal representative of the volume level; (5) a KEYPRESS monitoring device 33E, which monitors the depression of a key on a keypad or keyboard and which generates a digital signal representative of the key that was depressed; (6) a
- 10 MOUSE monitoring device 33F which monitors the depression of a mouse button and which generates a digital signal representative of the button that was depressed and the mouse coordinates; and (7) a scanner monitoring device 33G which monitors an optical and/or magnetic scanner and which
- 15 generates a digital signal representative of the scanning event and the information scanned. Each of the above described monitoring devices are connected to the CPU 21.

The signal receiving device 1 also comprises a real-time event clock 34 for maintaining accurate real-time event time

20 keeping and time measurements. The event clock 34 is connected to the CPU 21. The signal receiving device 1 also comprises a data latching device 35 which is connected to the CPU 21 and to each of the ON/OFF monitoring device 33A, the

CHANNEL monitoring device 33B, the MUTE/UNMUTE monitoring device 33C, the VOLUME CHANGE monitoring device 33D, the KEYPRESS monitoring device 33E, the MOUSE monitoring device 33F, the scanner monitoring device 33G as well as the real-time event clock 34.

Monitoring devices may also be utilized for monitoring the utilization of functions such as "SELECT" and "DISPLAY" as well as other viewer selectable functions and events related to on-line, interactive and non-interactive services and products available over a computer network such as the Internet or the world wide web as well as recreational activities and games.

Upon the occurrence of a pre-specified event, such as the turning of the signal receiving device 1 on or off, the changing of a television channel, the changing of volume level and/or the MUTING and UNMUTING of sound, the depressing of a key, the clicking of a mouse button, or the scanning of a bar code or magnetic strip, the data from each of the monitoring devices 33A to 33G, as well as the time measured by the real-time event clock 34, will be read by, and stored within, the data latching device 35 in order to provide a time-stamped operational state of the signal receiving device 1.

Monitoring devices may be utilized for monitoring any and all

of the available features, operations, and interactions, including those interactions with remotely located computers, over which a viewer or user may have control.

The present invention may also be utilized in conjunction
5 with universal remote control devices. In this regard, appropriate monitoring devices can be utilized to monitor any and all features and functions which may be activated, controlled and/or selected via the universal remote control device.

10 Figure 3 illustrates a preferred embodiment of a data structure which contains the data representative of the time stamped data obtained from the monitoring devices 33A - 33G. As illustrated in Figure 3, the data structure consists of a 256-bit data stream in which bits 0-9 store the time stamp
15 data, bits 10-11 store on/off data, bits 12-19 store channel data, bits 20-21 store MUTE/UNMUTE data, bits 22-29 store volume data, bits 30-37 store KEYPRESS data, bits 38-39 store MOUSE button-click data, bits 40-59 store mouse coordinate data, and bits 60-75 store user identification data. The
20 remaining bits 76-256 may be utilized to store other appropriate data as specified by the requirements of the system. This additional data can include information scanned from bar codes and magnetic strips. The volume data will

include data indicative of a volume decrease, a volume increase and the volume level. Bits 76-256 can also be utilized to store data related to system maintenance functions, clock functions, video recording functions as well 5 as other functions, services and products along with features ancillary thereto. Note that the bit assignments presented here are exemplary, and more or fewer bits can be assigned as necessary to the timestamp, the user ID, and the various functions monitored, and their order within the bit stream can 10 be altered, without departing from the spirit and scope of the invention.

In the preferred embodiment of the present invention, the states of each of the monitoring devices 33A - 33G are continuously monitored with their respective states 15 represented in a digital signal fashion. When a change of operational state occurs, whether by viewer activation of the input device 28 or the remote control device 2, an interrupt is generated that causes the CPU 21 to activate the data latching device 35. The data latching device 35 will read the 20 signals present at each of the monitoring devices 33A - 33G, as well as the time from the real-time event clock 34, so as to obtain a time-stamped digital signal representative of the post-event operational state of signal receiving device 1.

- 100-200-300-400-500
- It is important to note that additional monitoring devices may be utilized to monitor various other functions and/or features related to television viewing and/or use, as well as interactions with one or more remotely located 5 computers, such as those connected to the Internet. Further, monitoring devices may be utilized to monitor the usage and/or control of any and all features and/or functions which are provided on or by a remote control device or universal remote control device.
- 10 The signal receiving device 1 also comprises a memory storage device or database 36 for storing raw data and/or information, as well as other data and/or information, which is received by the data latching device 35. In this regard, the time-stamped data described herein, as well as any other 15 data relevant to system operation, is stored in the database 36.

As noted above, a central processing computer 4 is utilized, which collects data from any number of signal receiving devices, at a centralized location. The central 20 processing computer 4 collects and processes the data and/or information in conjunction with program and advertising commercial content and correlated time data.

Figure 4 illustrates the central processing computer 4 of

Figure 1 in block diagram form. In Figure 4, the central processing computer 4 comprises a central processing unit (CPU) 41 which serves to provide control over the central processing computer 4. The central processing computer 4 also

5 comprises a random access memory (RAM) device 42 and a read only memory (ROM) device 44 which are connected to the CPU 41.

The central processing computer 4 also comprises a receiver

45, for receiving signals, containing data and/or information, from the signal receiving device 1, and a transmitter 46, for

10 transmitting signals to the signal receiving device 1. The receiver 45 and the transmitter 46 are connected to the CPU 41. As will be described in more detail hereinbelow, the data and/or information which is received from the signal receiving device 1 will include the aforementioned time-stamped data

15 indicative of and/or reflecting the operational state of the signal receiving device 1.

The central processing computer 4 also comprises an input device 48, for enabling a user to enter data and/or commands into the central processing computer 4. The input device 48

20 is also connected to the CPU 41. The central processing computer 4 also comprises an output device 49 which, in the preferred embodiment, is a display device which provides a visual indication of the state of operation of the central

processing computer 4. The output device 49 is also connected to the CPU 41.

The central processing computer 4 also comprises a polling signal transmitter 50 which is connected to the CPU 41

5 and which transmits polling signals to the signal receiving device 1 and, in particular, to the polling signal receiver

30. The central processing computer 4 also comprises a

polling signal receiver 51 which is connected to the CPU 41

and which receives polling signals from the signal receiving

10 device 1 and, in particular, from the polling signal transmitter 31.

The central processing computer 4 also comprises a memory storage device or database 56 for storing data and/or

information which is received from the signal receiving device

15 1. The database 56, in the preferred embodiment, will contain information regarding the demographics of the viewer, subscriber, or customer base, as well as other data and/or information, which data and/or information may be compiled with viewer, subscriber, or customer consent or permission.

20 The system and method of the present invention serves to monitor television viewer behavior and/or patterns by recording data and/or information which reflects viewer events, which include on/off operation of the signal receiving

device 1, the changing of channels, the muting or unmuting of volume, the changing of volume, the depressing of a key on a keypad or keyboard, the clicking of a mouse button, the scanning of a bar code or magnetic strip, as well as any other 5 event-defined activities which may occur at the viewer's direction, including interactions with one or more remotely located computers. The data and/or information, which is initially stored in the signal receiver device 1, is transmitted, at various times, to the central processing 10 computer 4. The central processing computer 4 may then process the data and/or information, in any one of a number of ways in order to obtain statistical and/or other information which may be utilized in order to describe or gauge viewer behavior. This data and/or information may also provide 15 statistical information for a large group of viewers.

The system of the present invention is utilized in the following manner. Figure 5 illustrates a flow chart of the operation of the system and method of the present invention. Operation of the system commences at step 80. At step 81, the 20 television signals are broadcast to the viewer's signal receiving device 1. The television signals are broadcast via hard-wire cable transmission systems, by satellite or wireless transmission systems, and/or by any combination of both. The

television signals can be broadcast by a cable service provider or by a web site over the world wide web. The signal receiving device 1 receives the television signals at step 82. The television signals may be scrambled or unscrambled 5 depending upon the signals and/or the signal receiving device 1 of the viewer. This unscrambling operation, if required, will also take place during step 82.

In the case of scrambled signals, appropriate interfaces must be employed in conjunction with the signal receiving 10 device 1 in order to perform the necessary de-scrambling functions. In the case of cable television systems, the signals are transmitted via the cable system to the signal receiving device 1. In the case of satellite systems, the signals are transmitted to a receiver, such as a satellite 15 dish, and, thereafter, transmitted to the signal receiving device 1. The television signals are then transmitted or relayed to the viewer's television at step 83 via the cables utilized in conjunction therewith. The television signal corresponding to the channel selected is then viewable on the 20 television.

As described above, the monitoring devices 33A to 33G serve to continuously monitor the real-time operational states of the on/off switch, the channel being viewed, the

MUTE/UNMUTE function, the volume setting, the key pressed state, the mouse click state, and scanning activity of the signal receiving device 1, respectively, at step 84 and throughout system operation. The digital signal

5 representations of these real-time operational states is continuously available at, and from, the monitoring devices 33A - 33G. Further, the real-time event clock 34 keeps time continuously during system operation.

The data and/or information which represents the

10 operational states of the signal receiving device 1, will represent the postevent state of same. As noted above, the pre-defined event is any action taken by the viewer, including but not limited to turning the signal receiving device 1 on or off, changing a channel, MUTE or UNMUTE sound, decrease or

15 increase the volume, depress a key or click a mouse button, scan a bar code or magnetic strip via either the remote control unit 2 or the input device 28.

Upon the occurrence of the pre-defined event, at step 85, such as when the viewer turns the signal receiving device 1 on

20 or off, effects a channel change, MUTES or UNMUTES the sound and/or decreases or increases the volume, depresses a key or clicks a mouse button, or scans a bar code or magnetic strip, the post-event states of the monitoring devices 33A - 33G will

be determined, and latched, along with the time-stamp data from the event clock 34, at step 86, by the data latching device 35. Thereafter, at step 87, the latched data will be stored in the database 36.

5 The above sequence of events, defined by steps 85 to 87, may be repeated with the results corresponding thereto being latched and stored as described above. In this manner, the system 100 will monitor and record television viewing behavior which is indicative of and/or reflects the viewing behavior or
10 usage of the viewing audience or user group.

The above-described data will continue to be stored in database 36 until such time as the central processing computer 4 polls the signal receiving device 1 in order to initiate a data transmission or upload of the data and/or information.

15 At step 88, the central processing computer 4 will transmit a polling signal from the polling signal transmitter 50 to the polling signal receiver 30 of the signal receiving device 1. The CPU 21 of the signal receiving device 1, upon processing the received polling signal will, at step 90,
20 download the data and/or information which is stored in the database 36 by transmitting same, via the polling signal transmitter 31, to the polling signal receiver 51 of the central processing computer 4. Thereafter, the data and/or

information will be stored in the database 56 of the central processing computer 4, at step 90. In the preferred embodiment, the polling signal is transmitted periodically, from the central processing computer 4, to the signal

5 receiving device 1 in order to periodically upload the stored data and/or information. The data and/or information obtained from these polling/uploading routines is then stored in the database 56 of the central processing computer 4 for later processing and analysis.

10 The data and/or information obtained from the signal receiving device 1, for any viewer or number of viewers, is then available for processing, at step 91. Thereafter, the operation of the system will cease at step 92. The above procedure can be repeated for any number of viewers/signal

15 receiving devices which may be located in homes and/or at other viewer locations.

The data and/or information, which is stored in the database 56, may be processed in any appropriate manner in order to obtain desired data and/or information. The

20 processed data and/or information will contain data and/or information indicative of and/or reflecting viewer behavior and/or viewer responses to various programming and advertising subject matter.

- The processed data and/or information may be processed and updated, in conjunction with detailed information and/or listings corresponding to programming and advertising commercials, which may preferably include data including the
- 5 information content and along with corresponding timing information. For example, compiled data and/or information which correlates the program and/or advertising commercial content with corresponding timing information, may be utilized to correlate the viewer or user event activity with the
- 10 information related to the program or advertising commercial being viewed at the time of the event occurrence. In this regard, viewer or user behavior, in response to program or advertising commercial content, may be ascertained via the present invention.
- 15 In a preferred embodiment, data processing routines may be repeated every 5-10 seconds so as to provide continuous data updates. Analytic screens may also be employed so as to maintain the integrity of the data and/or information obtained by the system of the present invention.
- 20 The data and/or information obtained from the present invention may be utilized in order to provide viewer behavior information which may provide analysis across demographic and geographic groupings. The obtained results may facilitate the

assessment of the effectiveness of program and advertising commercials which, thereafter, may be made available to advertisers as well as to prospective advertisers.

The signal receiving devices 1, in the preferred

- 5 embodiment, may be addressable devices which may be selectively and individually polled. The signal receiving devices may also be polled by, and be required to return a return authorization signal to, the central processing computer 4. In this manner, only authorized signal receiving
- 10 devices 1 may be utilized with the system of the present invention.

The signal receiving device 1, described in the preferred embodiment of Figure 1, is an integral unit within a cable television signal receiver or "cable box". In alternate

- 15 embodiments, the signal receiving device 1 may be an integral unit of a television, a VCR, a web television or personal computer connected to the Internet, or such other devices capable of receiving television signals.

While the present invention has been described and

- 20 illustrated in various preferred and alternate embodiments, such descriptions and illustrations are not to be construed to be limitations thereof. Accordingly, the present invention encompasses any variations, modifications and/or alternate

embodiments with the scope of the present invention being limited only by the claims which follow.